Doc #56

(b)(1)
(b)(3)
(S)

This document consists of 4 pages
Copy No. 1 of 8 Series A

~~SECRET~~
SECURITY INFORMATION

January 21, 1953

MEMORANDUM FOR

[redacted]
Dr. Louis F. Woodruff, Department of the Army
Dr. A. Keith Brewer, Department of the Navy
Lt. Col. W. R. May, Department of the Air Force

Subject: Vinca Nuclear Science Institute, Yugoslavia.

[redacted]

The opportunity arose during a conference on December 12, 1952 with Mr. Svetozar Vukmanovic-Tempo, president of the Yugoslavian Economic Council, to accept an invitation to visit the Yugoslavian "Oak Ridge". Accordingly, we (Evgenije Kostic, Vojko Pavicic, and I) visited the institute for about four hours the next day. I was received very cordially, was shown all laboratories and other facilities except the biology laboratory, was introduced to almost all of the staff scientists, and was assured of their earnest and eager desire to cooperate with us through the exchange of personnel and unclassified information; I left with the impression that this was a well-organized, well-run, first-rate, non-political scientific organization, worthy of encouragement.

[redacted]

The institute, named the Institute for Research into the Structure of Matter, is at Vinca, about 15 kilometers northeast of Belgrade. Its manager is Stevan Dedijer, Princeton '34, and the assistant manager, Robert J. Walen, a naturalized Yugoslav of Dutch extraction. Both are competent; Walen is a recognized theoretical physicist. At the institute research is done in mathematics and mathematical physics, in chemistry, biology and physics. To do the research, they have a nicely laid out group of modern buildings, including apartments, for the approximately 80 young scientists and technicians. According to Dedijer,

declassified 3/18 (ab)

~~SECRET~~
SECURITY INFORMATION

971403

the institute was started in 1948, and since inception has been plagued by shortages of trained personnel, of information, and of critical supplies ....."we started out from below scratch."

They now make their own equipment, and are training their own people by daily lectures, seminars and study, by sending a few students to France and Norway, and by listening to a few (very few, I gather) visiting scientists from the organization of Western European nations cooperating in atomic energy research. They are now, according to Dedijer, nearly self-sufficient in materials, but need ideas and techniques. From a brief inspection they could use books, and critical parts, tubes, resisters, etc. The scientists and technicians all were less than 40 years old, seem to be competent and hard working, with high morale. They are publishing the results of their investigations. See copy of Volume No. 1, Reports of the Institute for Research into the Structure of Matter. They would like to exchange it and future issues for some of our (U.S.) publications.

The equipment and suggested lines of research seen in the various branches or divisions of the institute listed below are what I can remember.

Mathematics

They have completed research, made a model, and started construction of a digit computer; they have an operating variable current differential analyzer capable of handling 30 equations simultaneously.

Physics

They are making their own scale of 100 scalers, field counters, proportional counters, and ionization chambers. Their standard probe (about 8 inches by 1 inch) is filled with argon and alcohol, and has a plateau of 190 volts with a 5 percent gradient; they also make special probes, outside electrode-, long thin-walled-, end window-, and metal box-types.

Experimental work is in progress using cloud chambers of three types, standard, low temperature, and continuous recording; some of the resulting track pictures were good.

A 1,500,000 volt Cockroft accelerator of French make is being installed permanently, after first being tested out.

They are making some isotopes (C_{11}) using a beryllium/radium source; they are also using some Co_{60} obtained from Harwell.

Research is in progress with heavy water obtained from Norway in the separation and low temperature catalysis (with Al and other metals) of parahydrogen ($\uparrow\uparrow H_2 \rightarrow \uparrow H_2\downarrow$); in the growth of crystals for scintillometers (I saw some napthalene crystals that were transparent, euhedral, and from one-fourth to one-half inch on an edge.)

They also have a French-made mass spectrometer (Nier type); alpha, beta, gamma proportional counters and chambers, with differential analyzer; and a simple gaseous diffusion apparatus using "active" CO_2.

Chemistry

Aside from some of the equipment listed under Physics, they have some resin-ion-exchange columns for experimental separation of uranium from rare earths. They are working on analytical methods of preparing uranium nitrate and of the ether extraction of uranium from materials (probably including ores) using a spectroscope of Bergen (?) type to check the purity of the products.

Biology

This section I did not see, not because of their restriction, but because of lack of time; according to Dadijer, they are doing some research with C_{14} and making some tissue-exposure studies.

Shop facilities

Shops seem to be well equipped with power tools, mainly of German and Swiss make, but I saw two power lathes of Yugoslav manufacture. I did not take time to visit the glass blowing shop.

Library

The library was relatively small but seemed to be arranged well and in good shape, with card catalogues, ample reading rooms, etc. I would guess there were about 5,000 to 10,000 books on the shelves, probably most of them American, although some were German, French, or other language volumes. There seemed to be a shortage of periodicals.

During a brief discussion after the visit to the laboratories, Dadijer made a point of saying that I was the first American to see the place, he

hoped not the last; that any accredited American scientist would be made most welcome, although.... "not embassy people or newspaper reporters". They regarded it as poor taste, and naive for the American military attache to have a picnic on their front lawn. This apparently happened, I discovered later, whether it was done on purpose or by chance, I do not know. Dedijer and Walen seemed eager to have competent American physicists, chemists, and others visit, lecture, and perhaps work there--- "...Just call me up in Belgrade, or go through Vukmanovic - Tempo". They are not working on problems of nuclear fission at present, but, according to Dedijer, are "talking reactors".

[redacted]

[redacted]